Operational Amplifiers

TAA 761; A; G; GG; K; W
TAA 762
TAA 765; A; G; GG; W

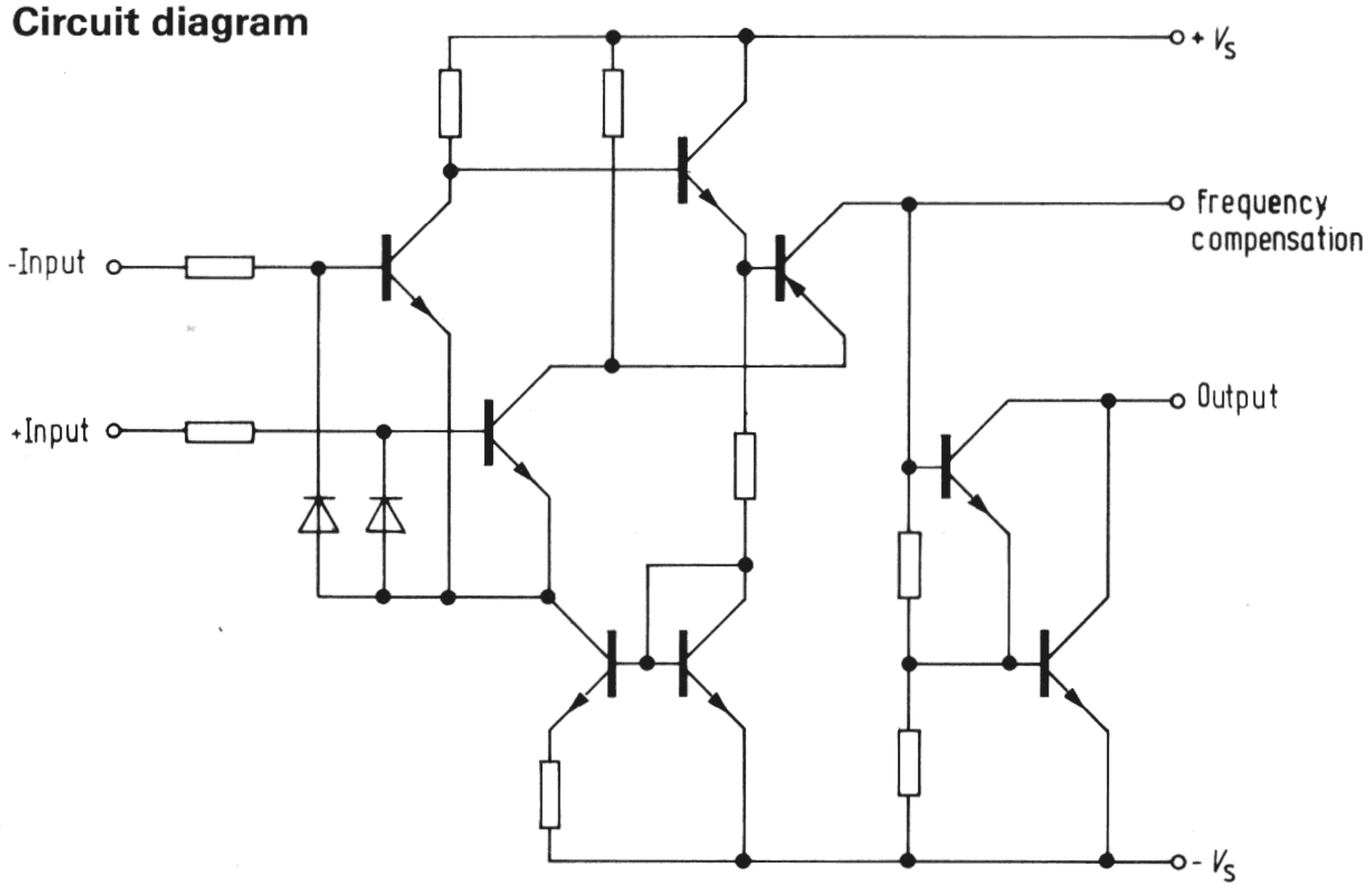
Particularly economic and universal operational amplifiers. Owing to their excellent performance qualities they are well suited for a wide range of applications, such as automatic controls, automotive electronics, AF-circuits, analog computers etc.

In addition to high gain, high input resistance, low offset voltage, low dependence on temperature and supply voltage, the amplifiers feature:

- Wide common-mode range,
- Large supply voltage range,
- Large control range,
- Wide temperature range (TAA 762),
- High output current,
- Simple frequency compensation

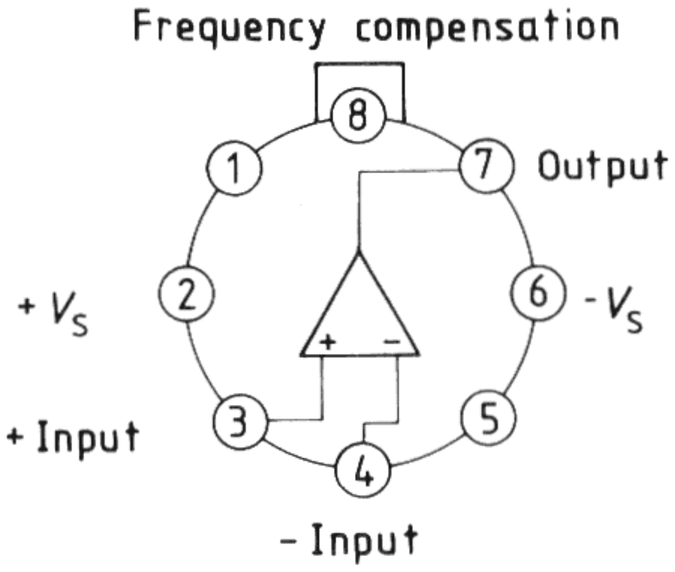
Type	Ordering code
TAA 761	Q67000–A224
TAA 761 A	Q67000–A522
TAA 761 G	Q67000–A598 G
TAA 761 GG	Q67000–A598 GG
TAA 761 K	Q67000–A224 K
TAA 761 W	Q67000–A598
TAA 762	Q67000–A523
TAA 765	Q67000–A226
TAA 765 A	Q67000–A524
TAA 765 G	Q67000–A599 G
TAA 765 GG	Q67000–A599 GG
TAA 765 W	Q67000–A599

Circuit diagram

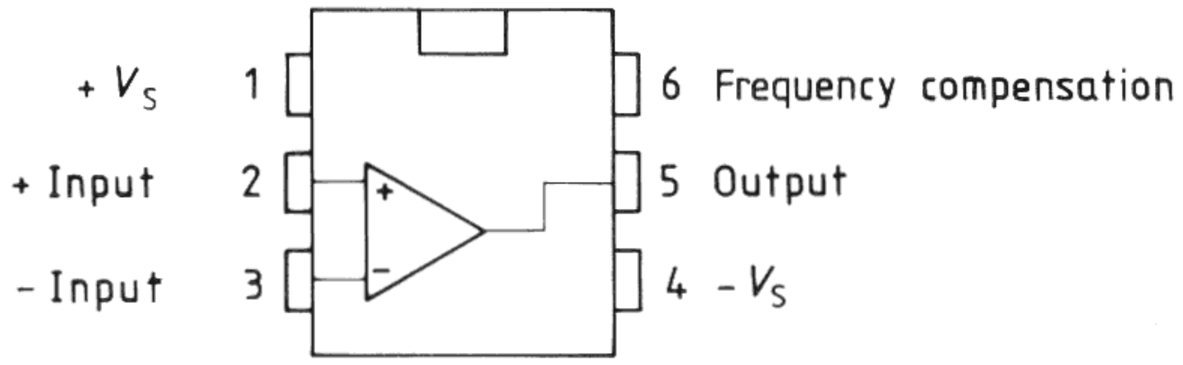


Pin configurations

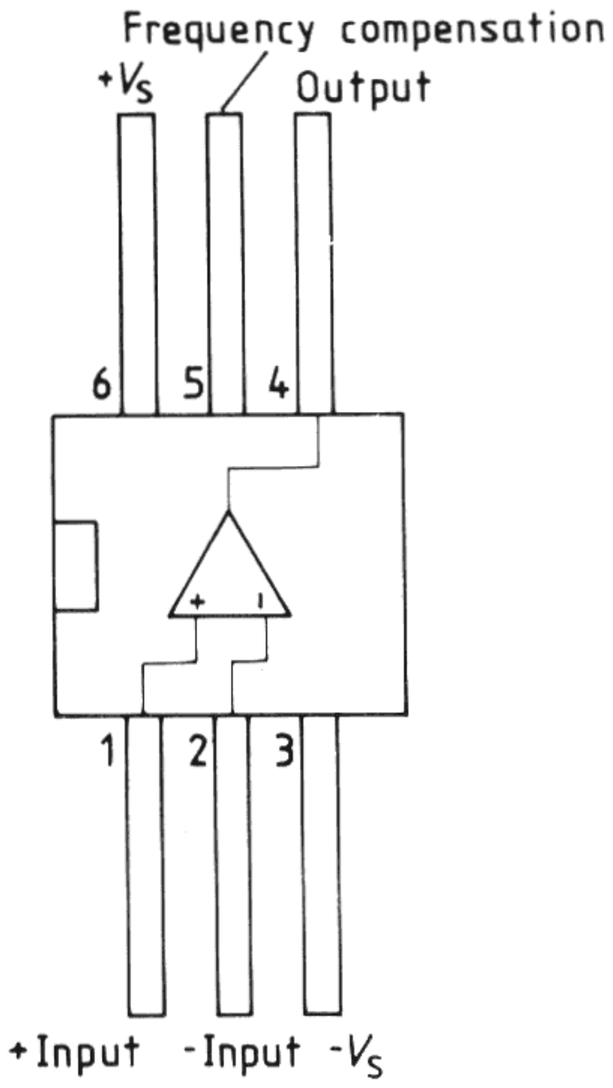
TAA 761
TAA 762
TAA 765



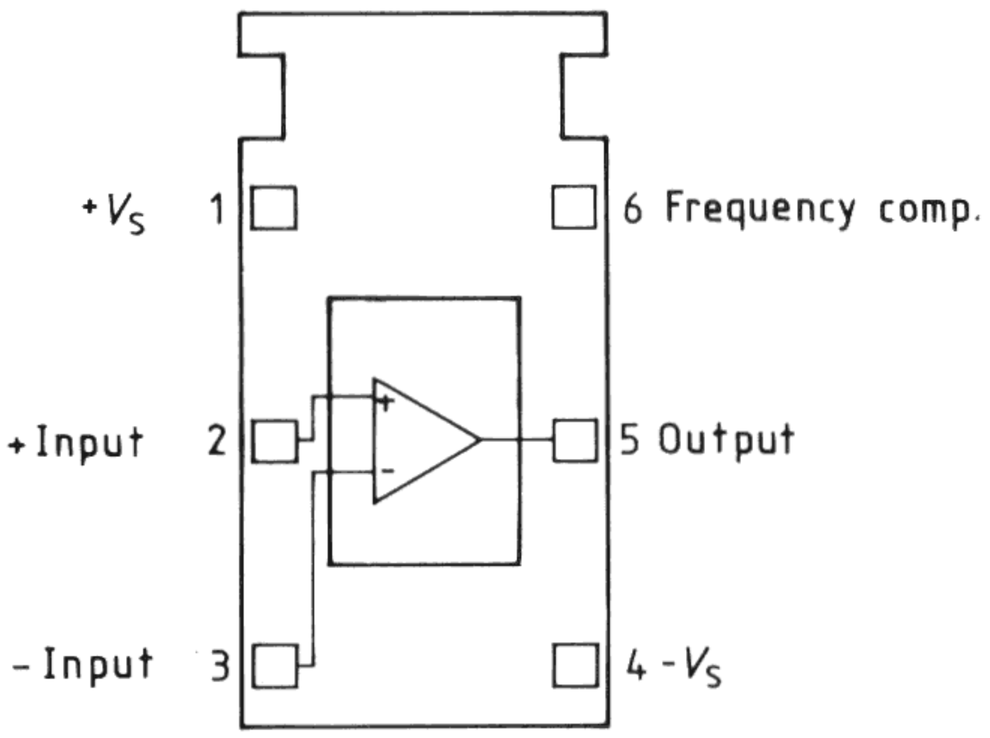
TAA 761 A
TAA 765 A



TAA 761 G; GG; W
TAA 765 G; GG; W



TAA 761 K



Maximum ratings

Supply voltage	V_S	±18	V
Output current	I_Q	70	mA
Differential input voltage	V_{ID}	$\pm V_S$	V
Junction temperature	T_j	150	°C
Storage temperature range	T_s	−55 to 125	°C
Thermal resistances			
system – case: TAA 761/762/765	$R_{thscase}$	80	K/W
system – ambient air: TAA 761/762/765	R_{thsamb}	190	K/W
system – ambient air: TAA 761 A/765 A	R_{thsamb}	140	K/W
system – ambient air: TAA 761W;G;GG;765W;G;GG	R_{thsamb}	200	K/W

Range of operation

Supply voltage	V_S	±1.5 to ±18	V
Ambient temperature TAA 761;A;W;G;GG;K	T_{amb}	0 to 70	°C
TAA 765;A;W;G;GG	T_{amb}	−25 to 85	°C
TAA 762	T_{amb}	−55 to 125	°C

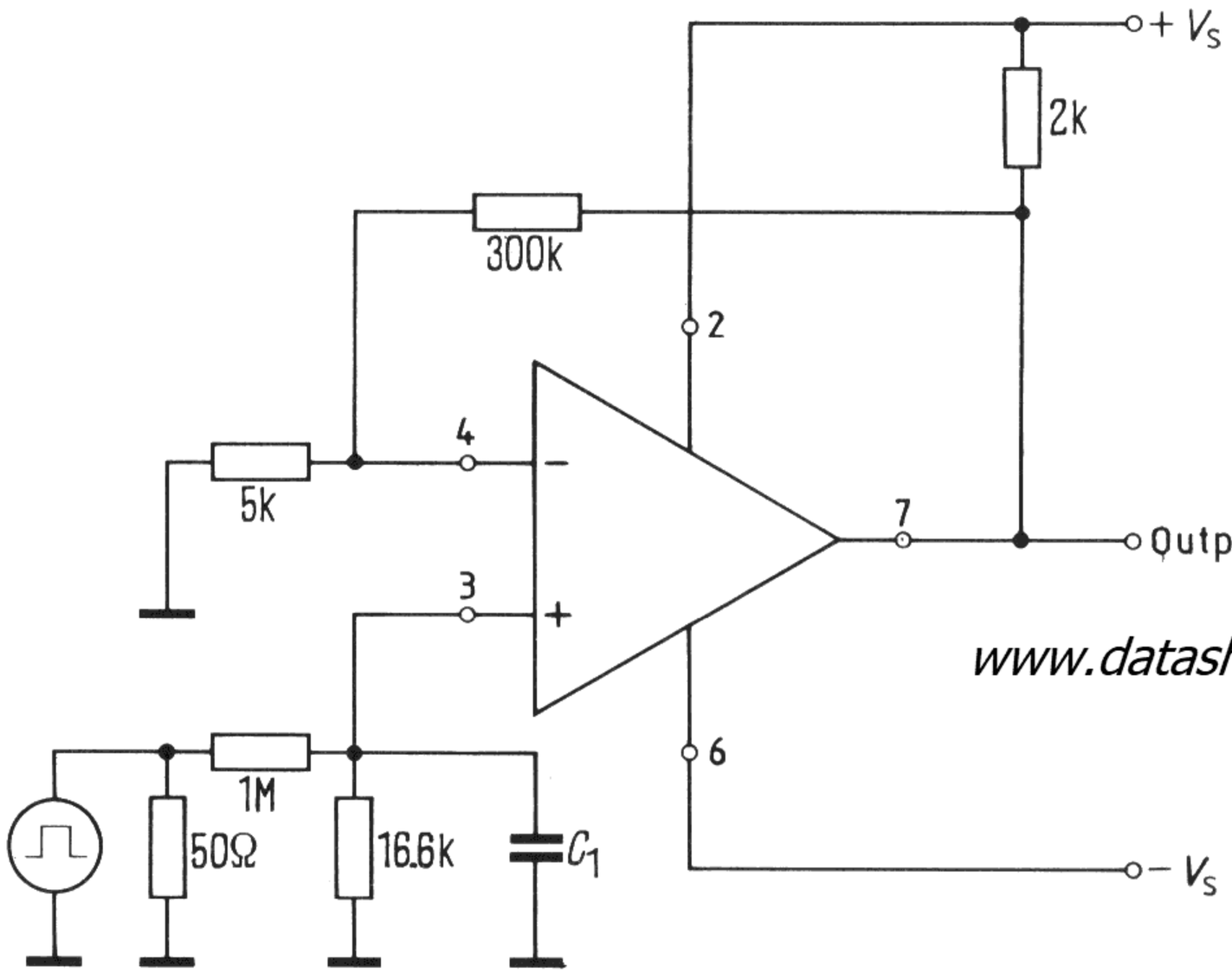
Electrical characteristics

$V_S = \pm 15$ V

		TAA 761 TAA 765 $T_{amb} = 25$ °C			TAA 762 $T_{amb} = 25$ °C			TAA 762 $T_{amb} = -55$ to 125 °C		
		min	typ	max	min	typ	max	min	max	
Supply current (no load)	I_S		1.5	2.5		1.5	2.5			mA
Input offset voltage ($R_G = 50\ \Omega$)	V_{IO}	−6		6	−4		4	−6	6	mV
Input offset current	I_{IO}	−300	±80	300	−100	±50	100	−300	300	nA
Input current	I_I		0.5	1.0		0.3	0.7		1.0	µA
Output voltage ($R_L = 2$ kΩ)	V_{Qpp}	14.9		−14	14.9		−14	14.8	−14	V
Output voltage ($R_L = 620\ \Omega$)	V_{Qpp}	14.9		−12.5	14.9		−12.5	14.8	−12	V
Output voltage ($R_L = 2$ kΩ, $f = 100$ kHz)	V_{Qpp}		±10			±10				V
Input impedance ($f = 1$ kHz)	Z_i		200			200				kΩ
Open-loop voltage amplification ($R_L = 2$ kΩ, $f = 1$ kHz)	A_{VO}	81.5	85		85	87		80		dB
Open-loop voltage amplification ($R_L = 10$ kΩ, $f = 1$ kHz)	A_{VO}		90			92				dB
Open-loop voltage amplification ($R_L = 2$ kΩ, $f = 1$ MHz)	A_{VO}		43			43				dB
Output reverse current	I_{QR}		1	10		1	10			µA

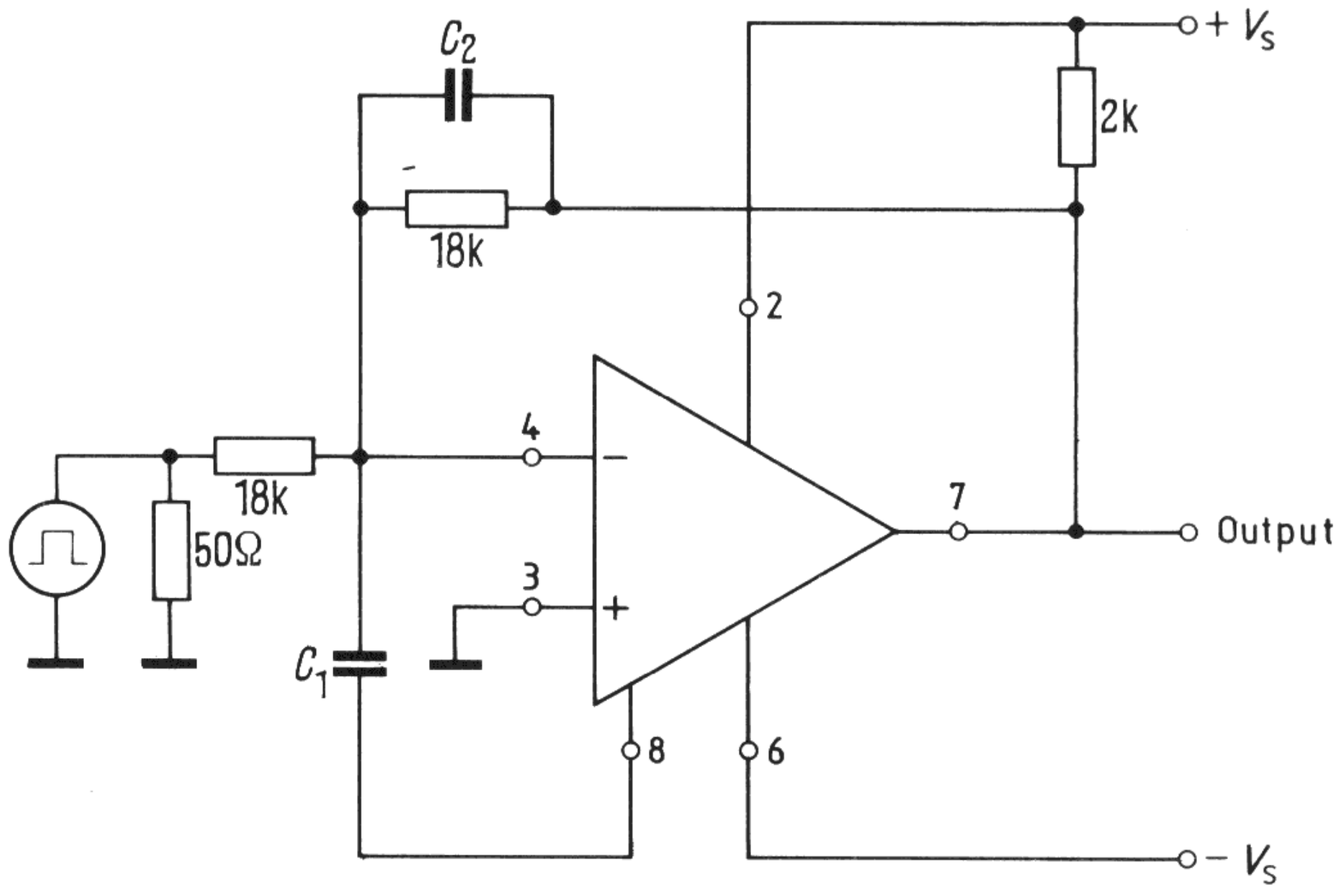
Characteristics $V_S = \pm 15$ V		**TAA 761 TAA 765** $T_{amb} = 25$ °C			**TAA 762** $T_{amb} = 25$ °C			**TAA 762** $T_{amb} = -55$ to $+125$ °C		
		min	typ	max	min	typ	max	min	max	
Input common-mode range ($R_L = 2$ kΩ)	V_{IC}	12.0	±13.5	–12.0	12.0	±13.5	–12.0			V
Common-mode rejection ($R_L = 2$ kΩ)	k_{CMR}	65	79		70	81				dB
Supply voltage rejection ($A_V = 100$)	k_{SVR}		25	200		25	200			µV/V
Temp. coefficient of V_{IO} ($R_G = 50$ Ω)	α_{VIO}		6			6	25			µV/K
Temp. coefficient of I_{IO} ($R_G = 50$ Ω)	α_{IIO}		0.3			0.3	1.5			nA/K
Rise time of V_Q for non-inverting operation (test circuit 1)	$\frac{dvq}{dtr}$		9			9				V/µs
Rise time of V_Q for inverting operation (test circuit 2)	$\frac{dvq}{dtr}$		18			18				V/µs
Noise voltage (to spec. DIN 45405; measured at input; $R_S = 2.5$ kΩ) $V_S = \pm 5$ V	V_N		3			3				µV
Supply current (no load)	I_S		0.7			0.7				mA
Input offset voltage	V_{IO}	–6		6	–4		4			mV
Input offset current	I_{IO}	–300		300	–70		70			nA
Input current	I_I			1.0			0.6			µA
Output voltage ($R_L = 2$ kΩ)	V_{Qpp}	4.9		–4	4.9		–4	4.8	–4	V
Open loop voltage amplification ($R_L = 2$ kΩ, $f = 1$ kHz)	A_{VO}	70			70					dB

Test circuit for rate of rise (non-inverting operation)



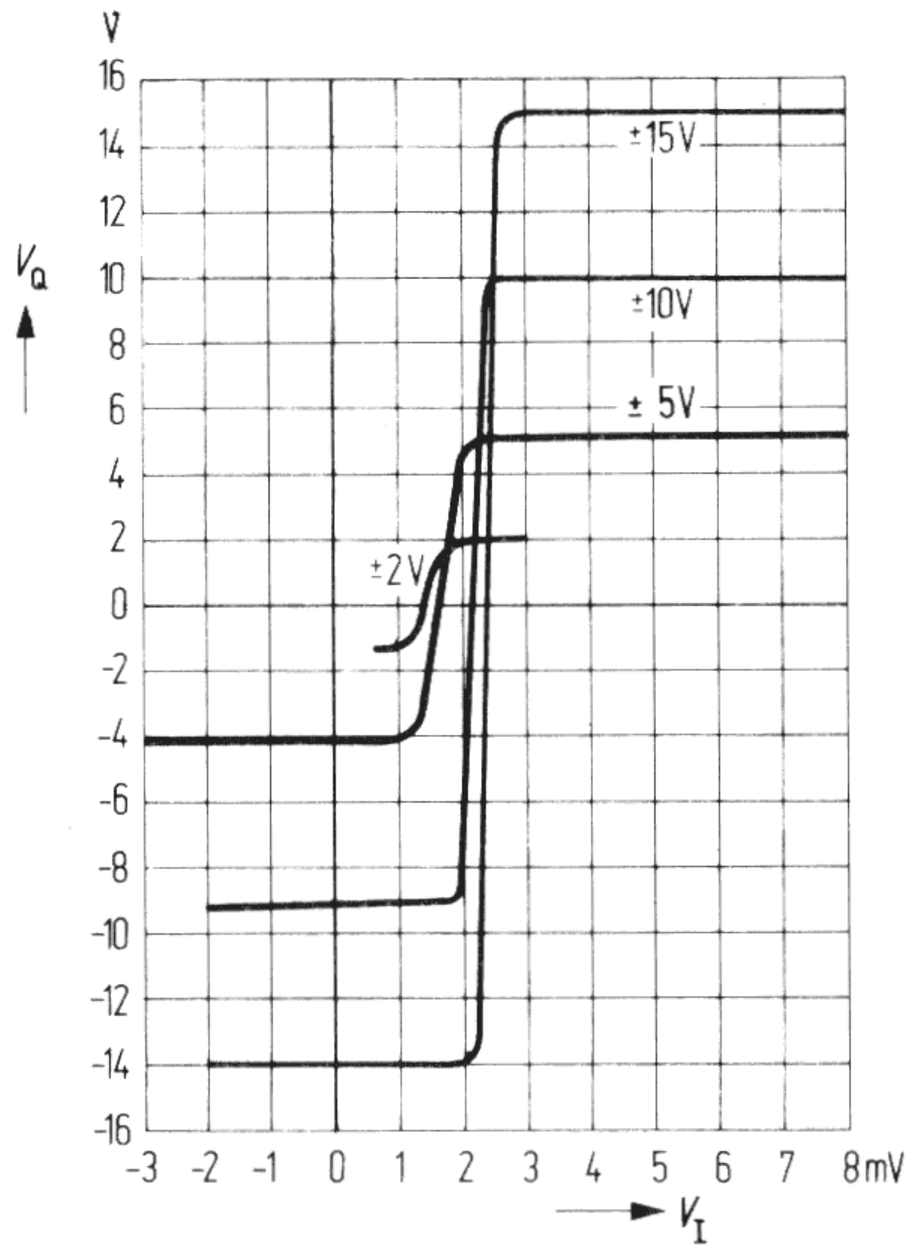
C_1 for min. overshoot (appr. 22 pF)

Test circuit for rate of rise (inverting operation)

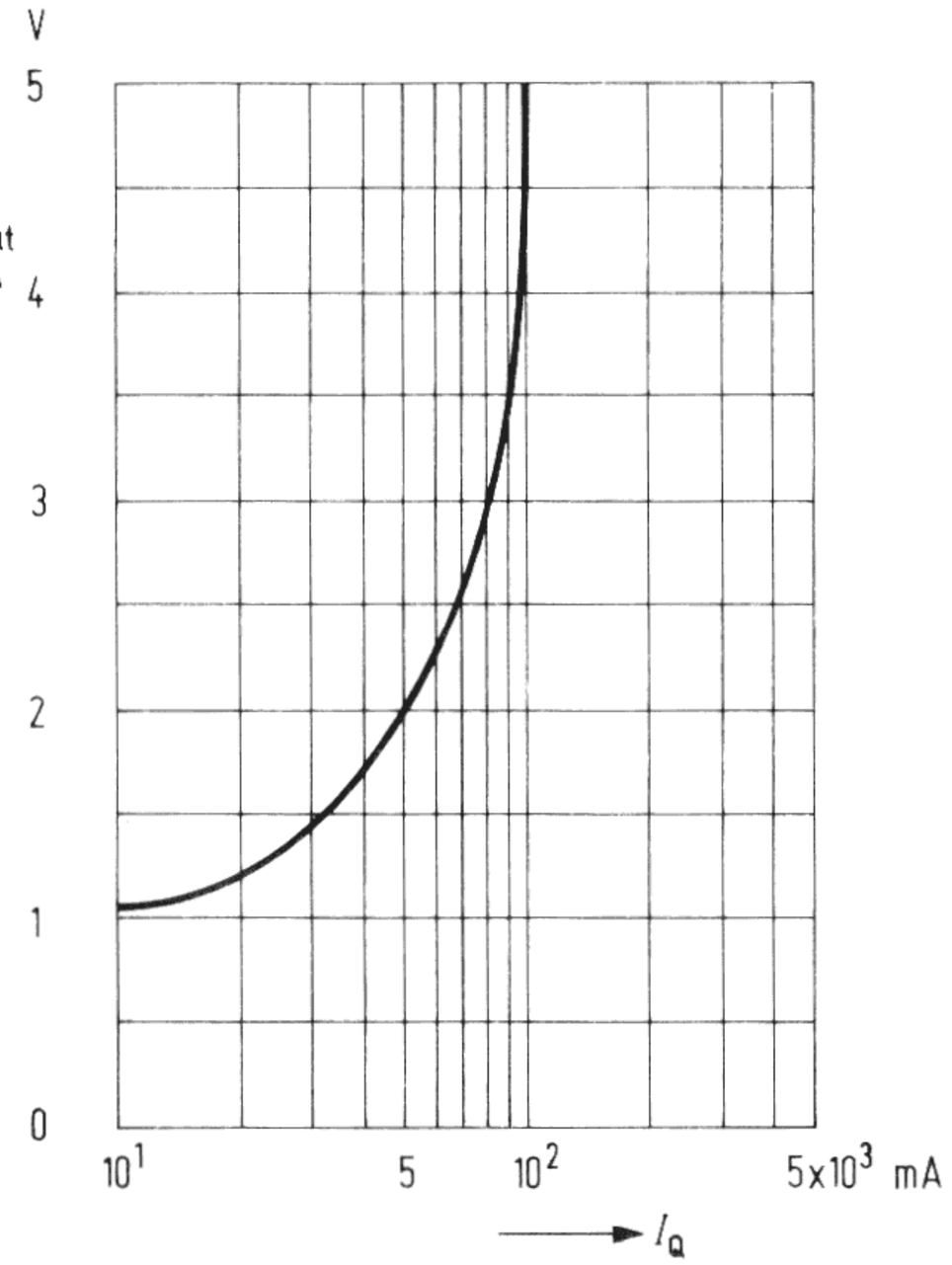


C_2 causes a frequency dependent compensation to reduce the rise time (appr. 390 pF)
C_1 for min. overshoot (appr. 3.9 pF)

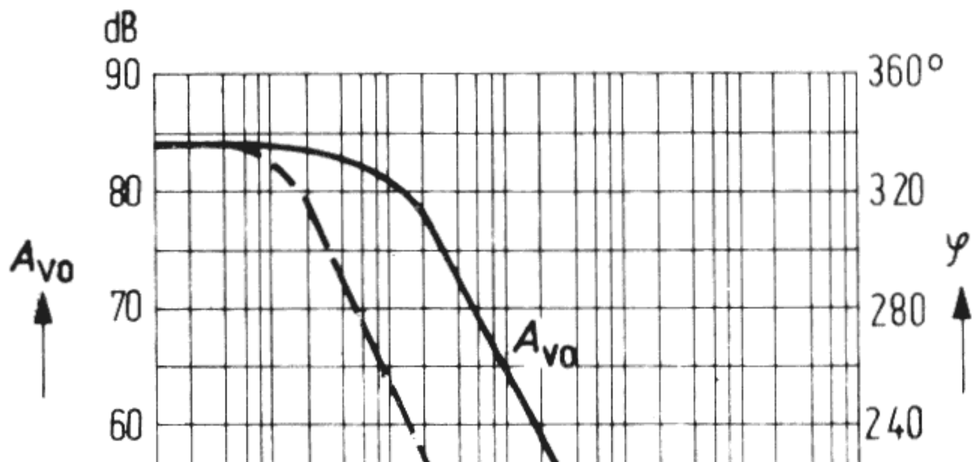
Transfer characteristic $V_Q = f(V_I)$
V_S = parameter, R_L = 2 kΩ



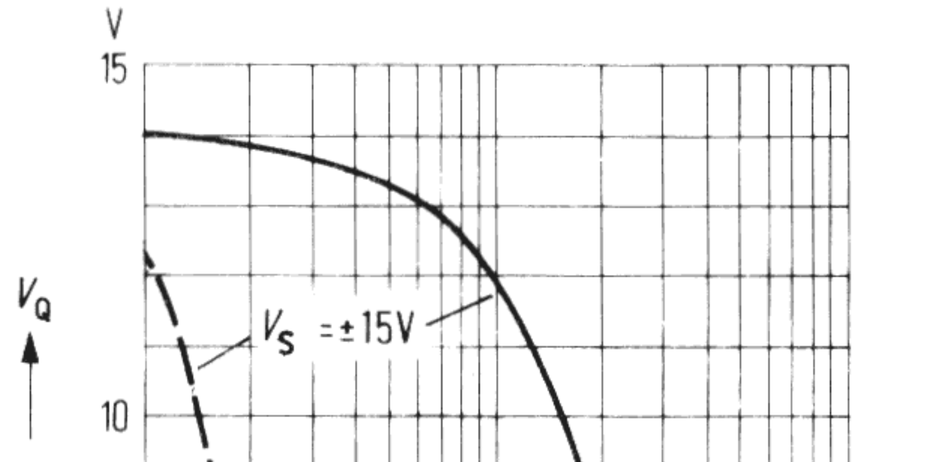
Saturation voltage $V_{sat} = f(I_Q)$
T_{amb} = 25 °C



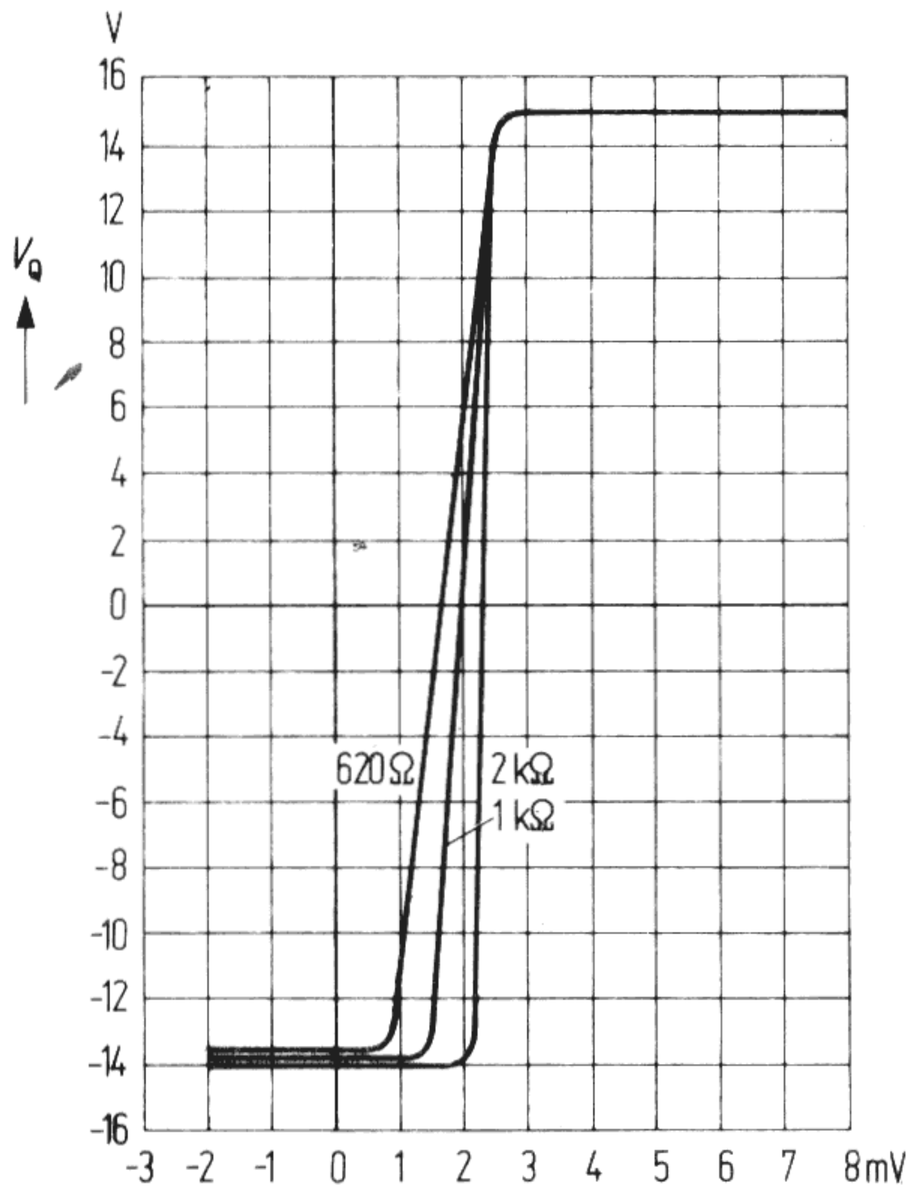
Open-loop voltage amplification and phase $A_{VO} = f(f)$; $\varphi = f(f)$; V_S = ±10 V/ ±15 V; R_L = 2 kΩ



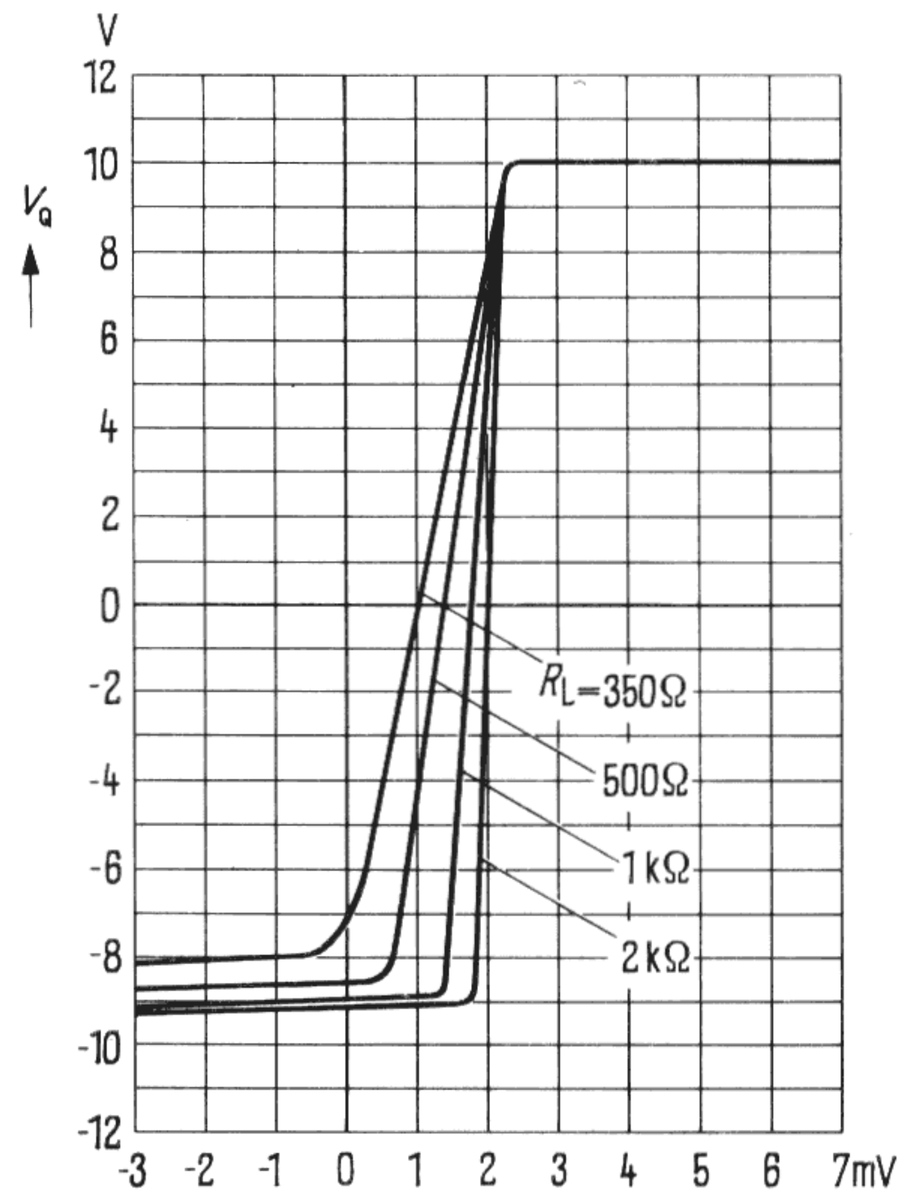
Frequency dependence of large signal modulation $V_Q = f(f)$



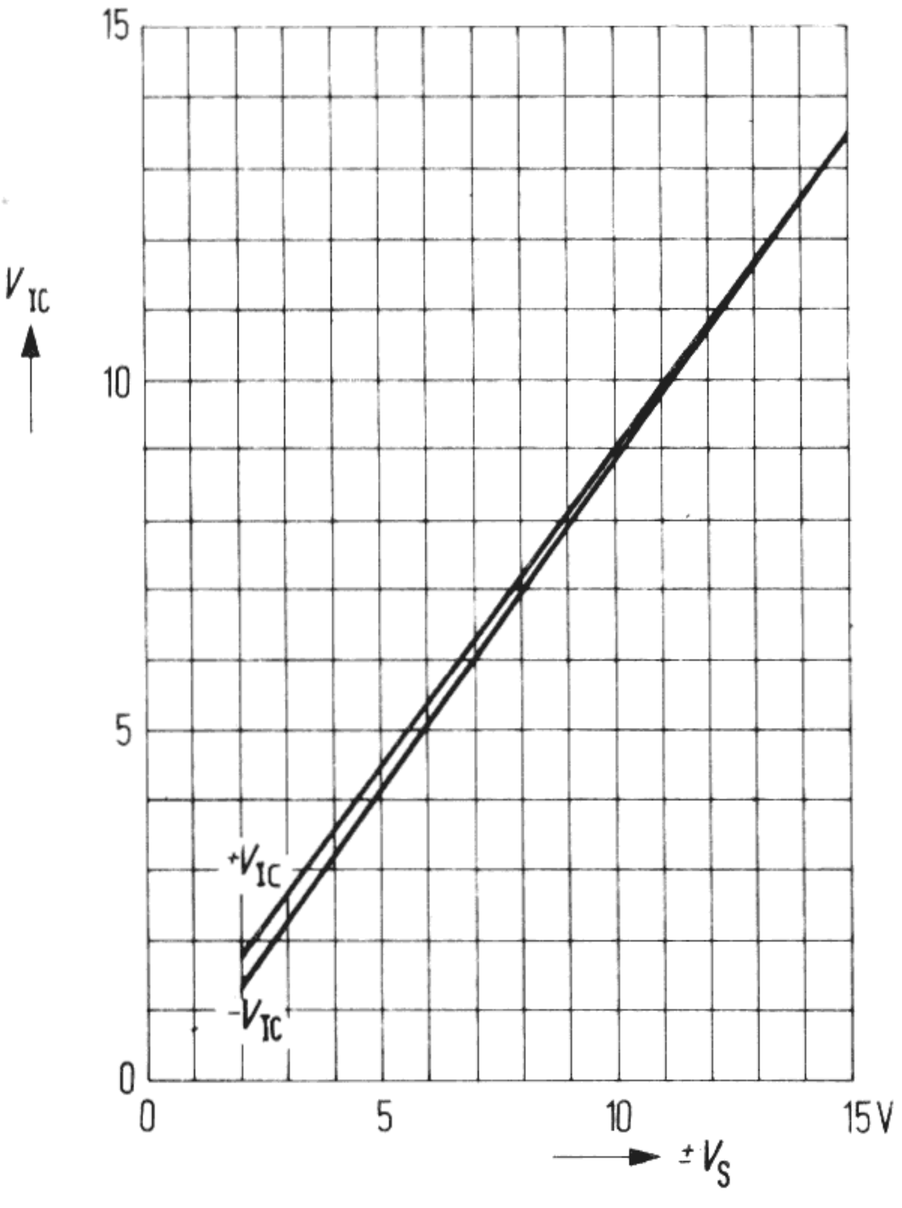
Transfer characteristic $V_Q = (V_I)$
$V_S = \pm 15$ V; R_L = parameter



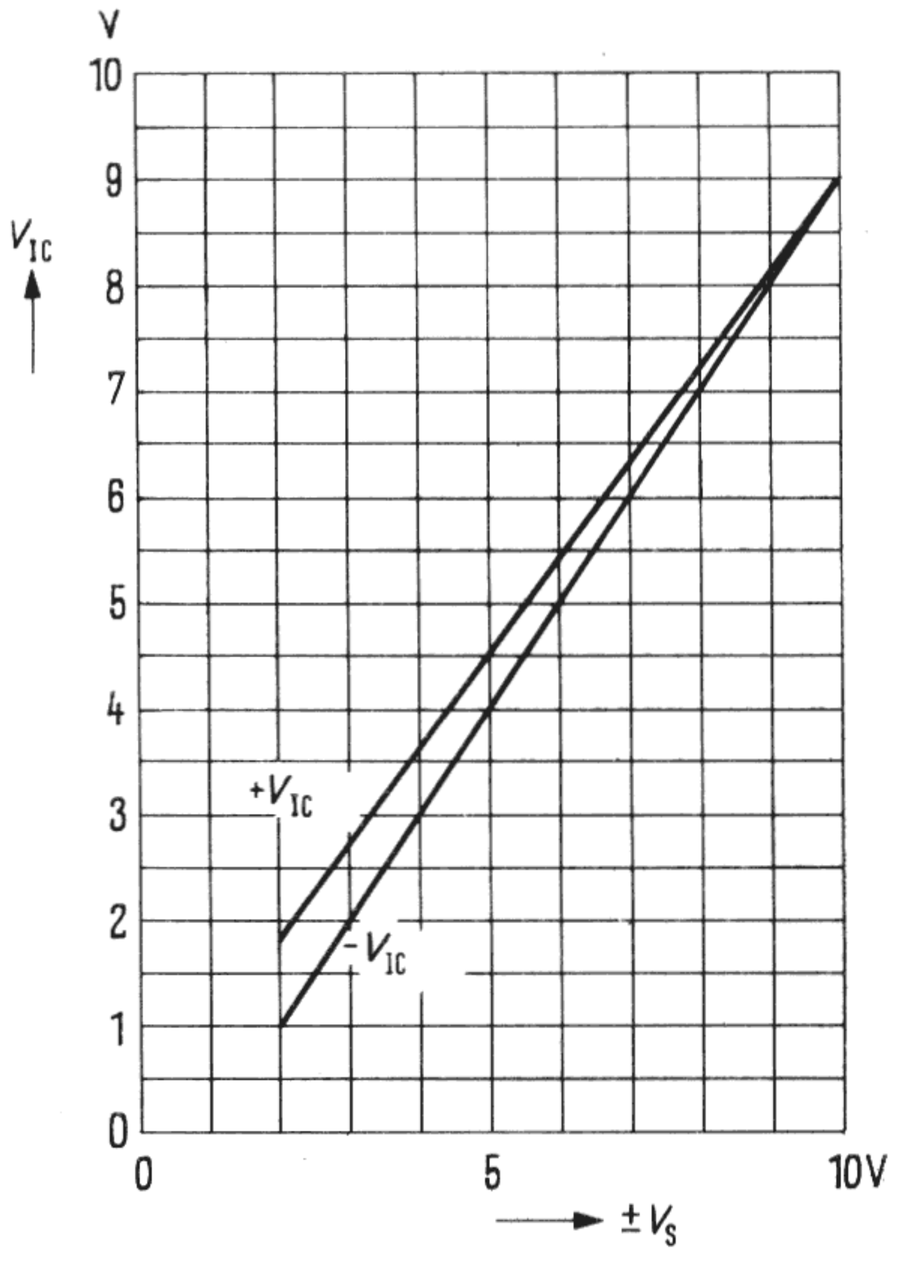
Transfer characteristic $V_Q = f(V_I)$
$V_S = \pm 15$ V; R_L = parameter



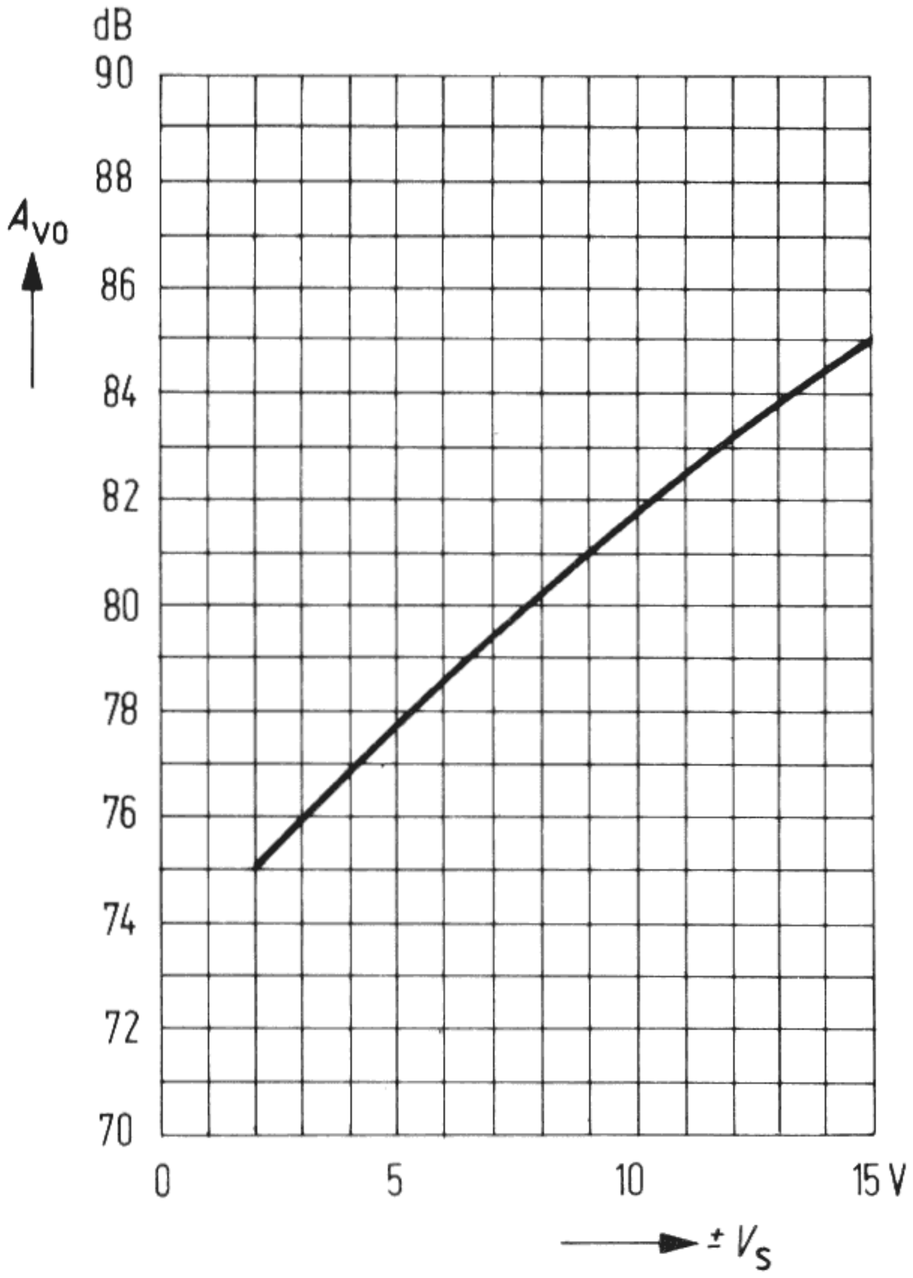
Common mode range $V_{IC} = f(V_S)$



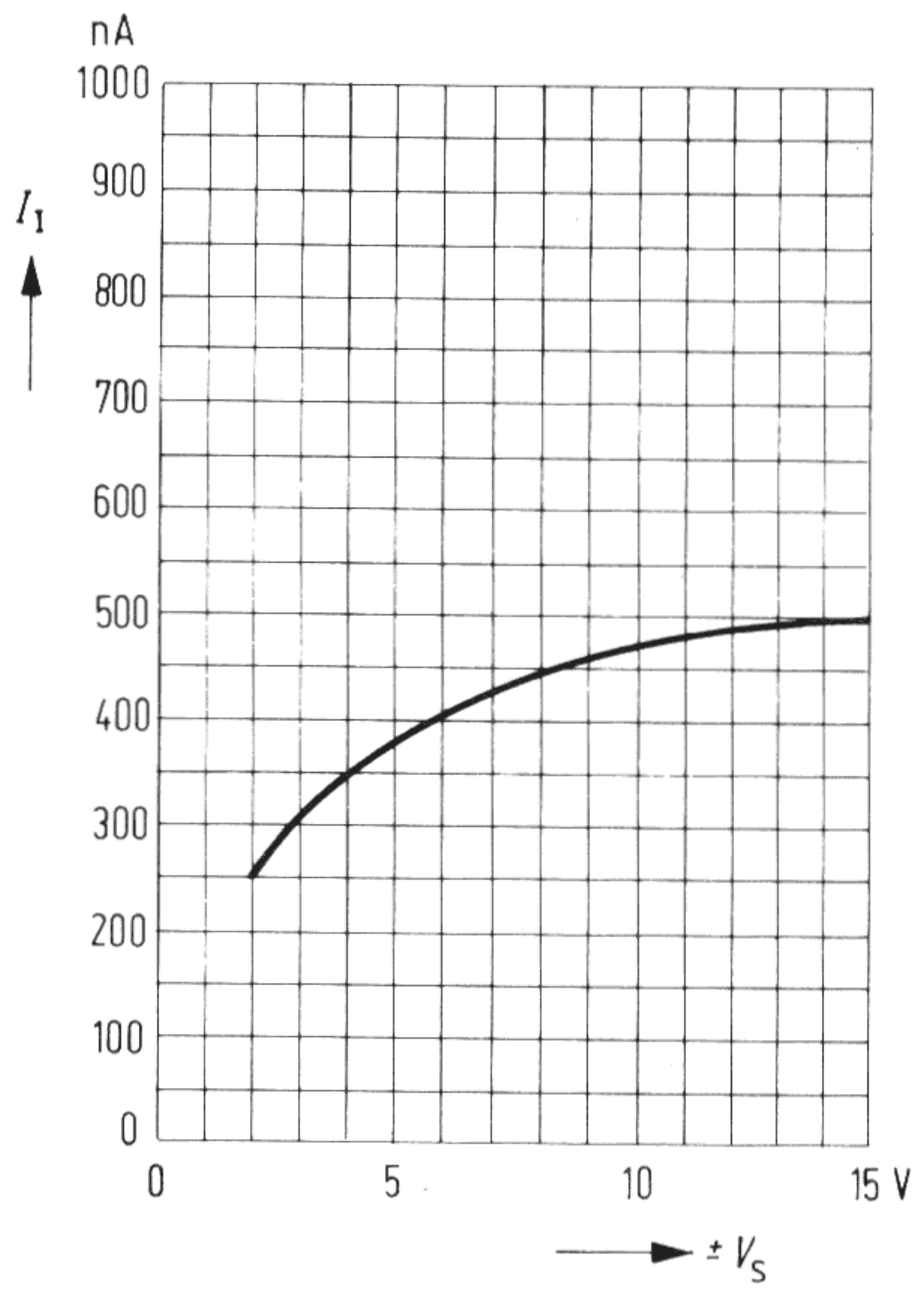
Common mode range $V_{IC} = f(V_S)$



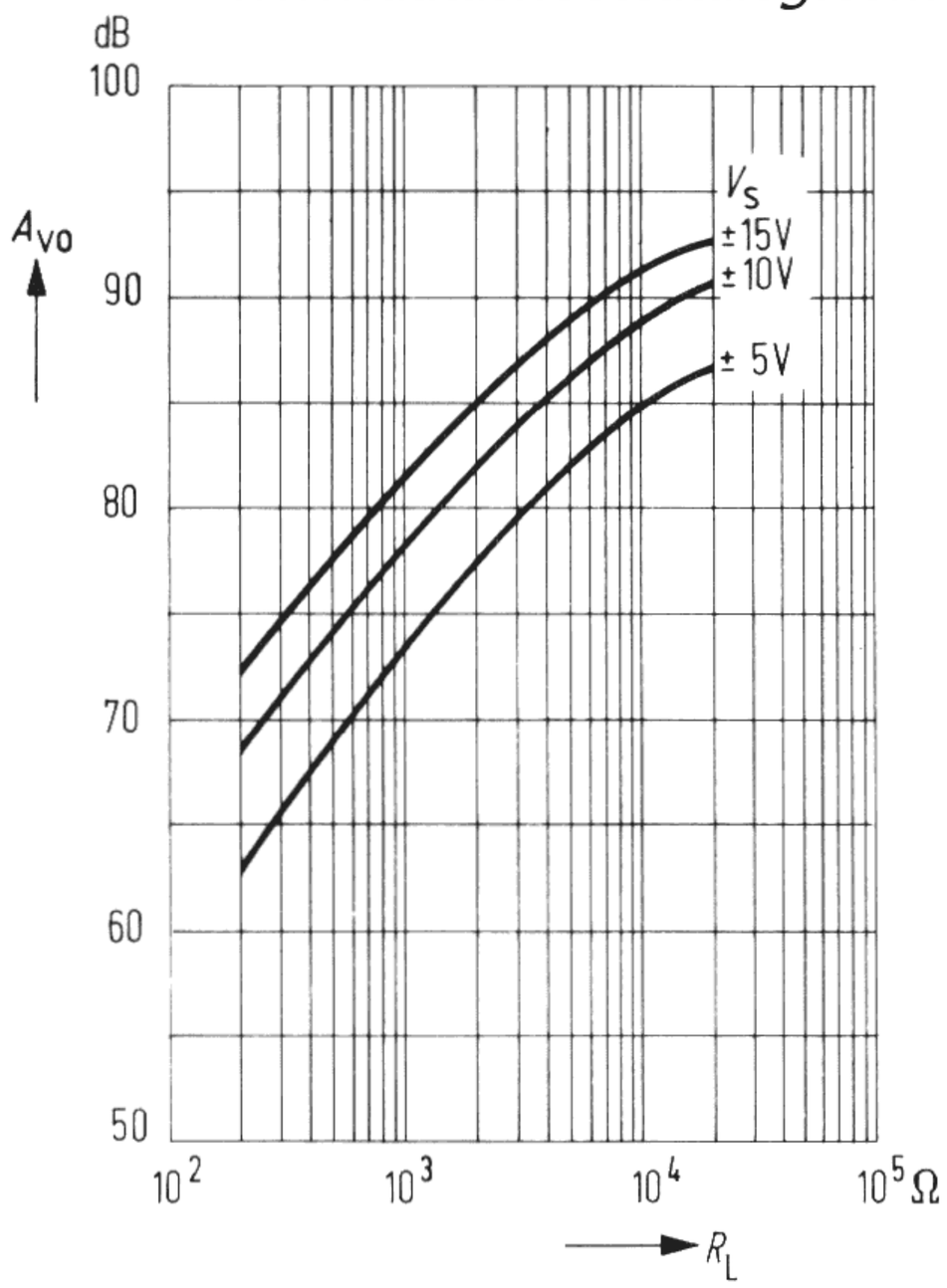
Open-loop voltage amplification
$A_{VO} = f(V_S)$; $T_{amb} = 25\,°C$
$R_L = 2\,k\Omega$



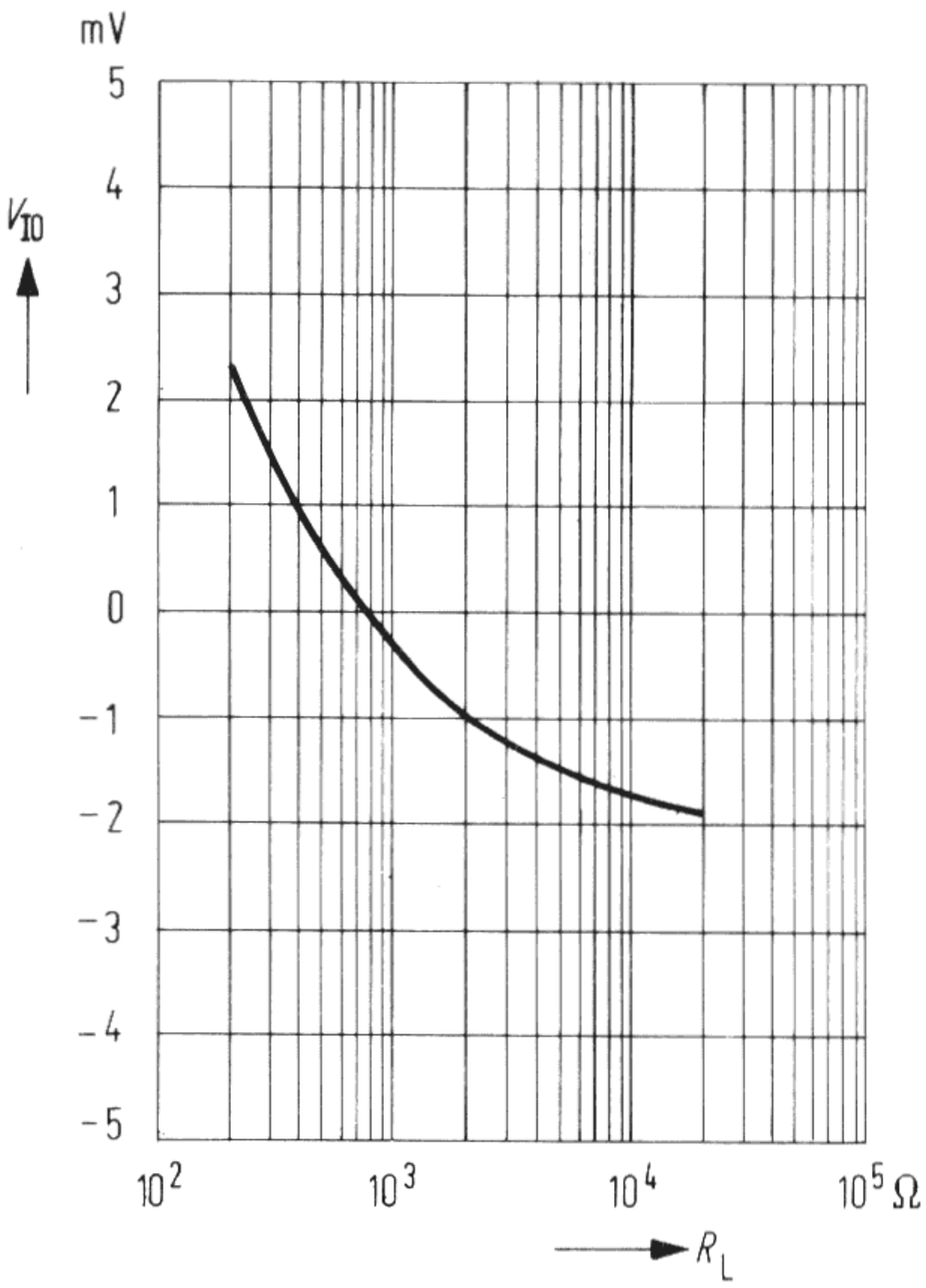
Input current $I_I = f(V_S)$



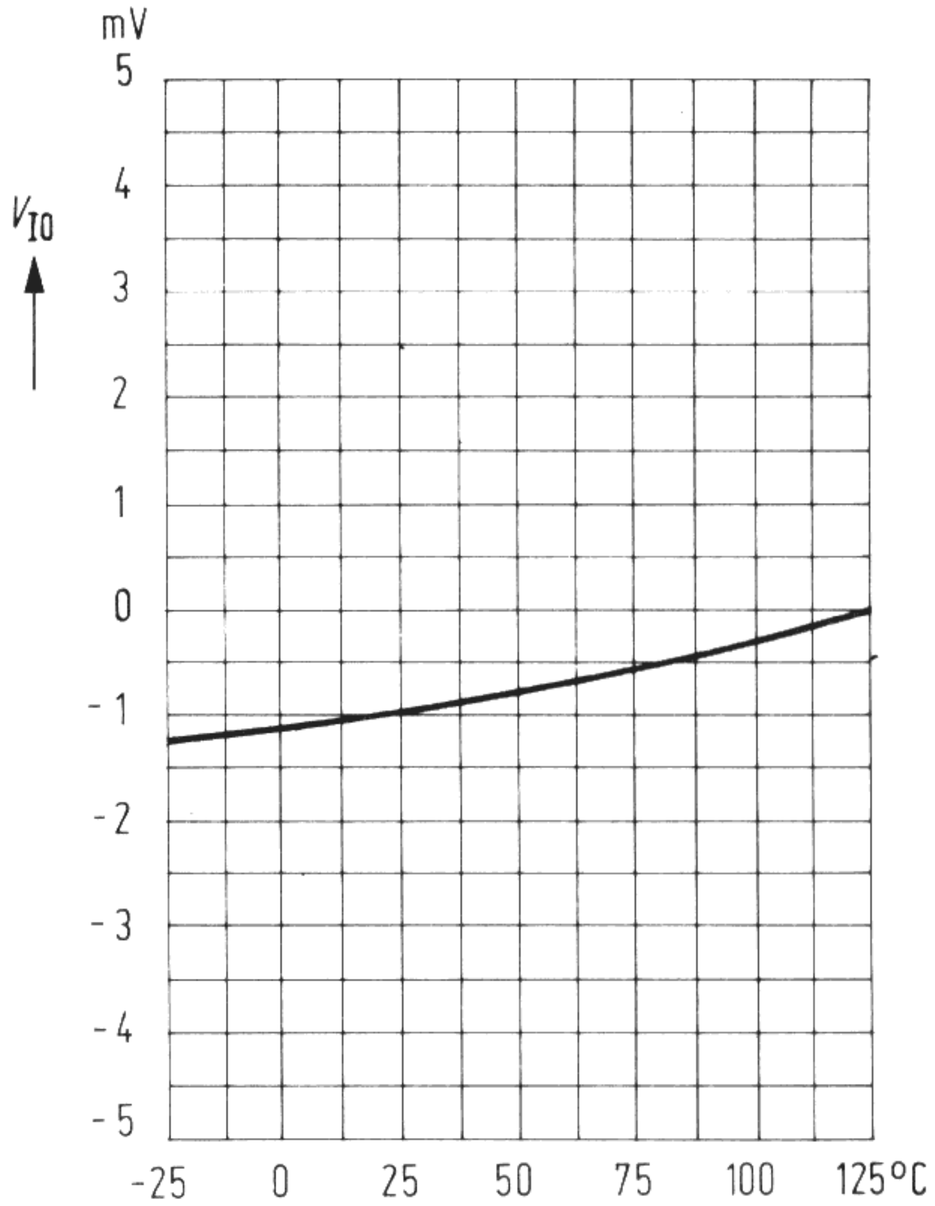
Open-loop voltage amplification
$A_{VO} = f(R_L)$; $T_{amb} = 25\,°C$



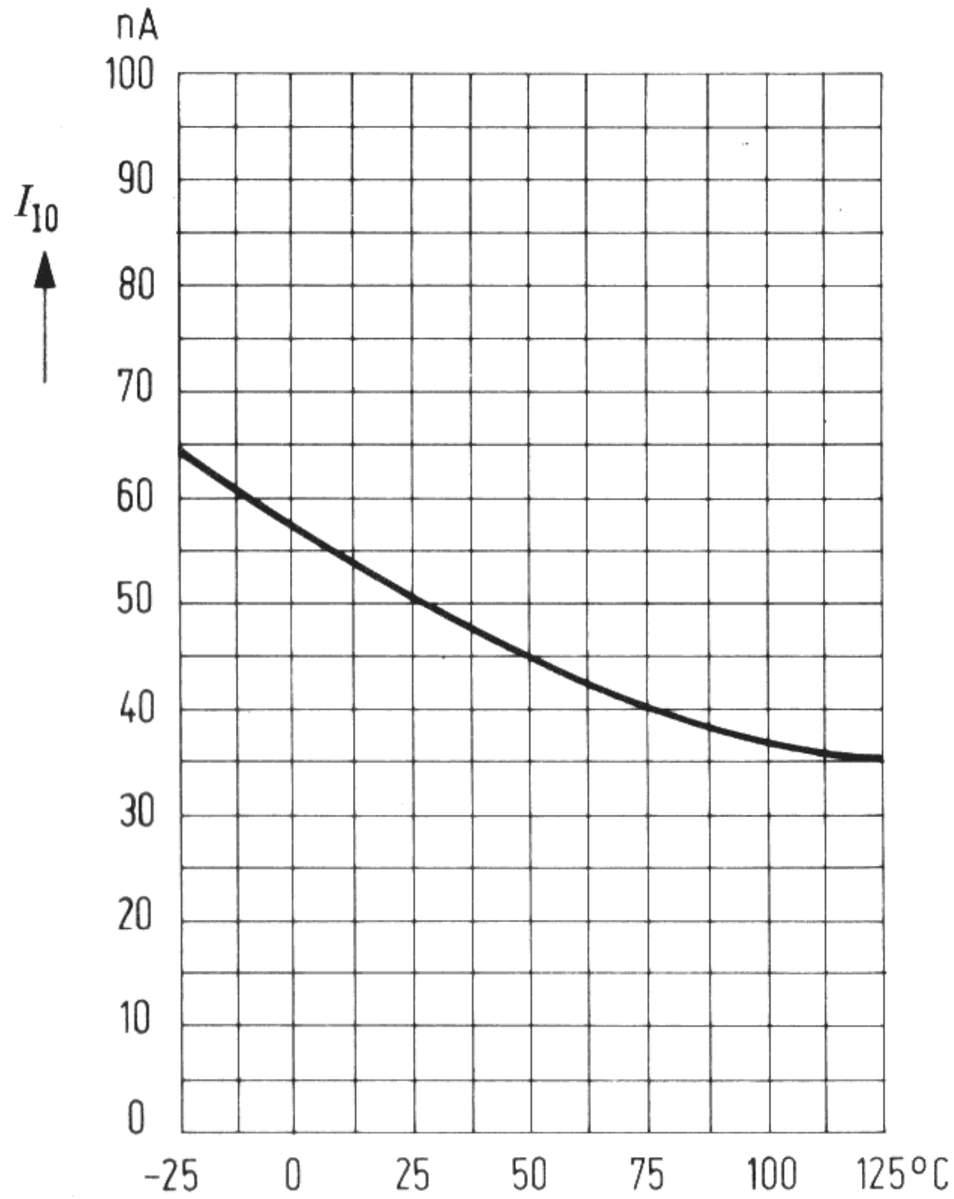
Input offset voltage
$V_{IO} = f(R_L)$; $V_S = \pm 15$ V



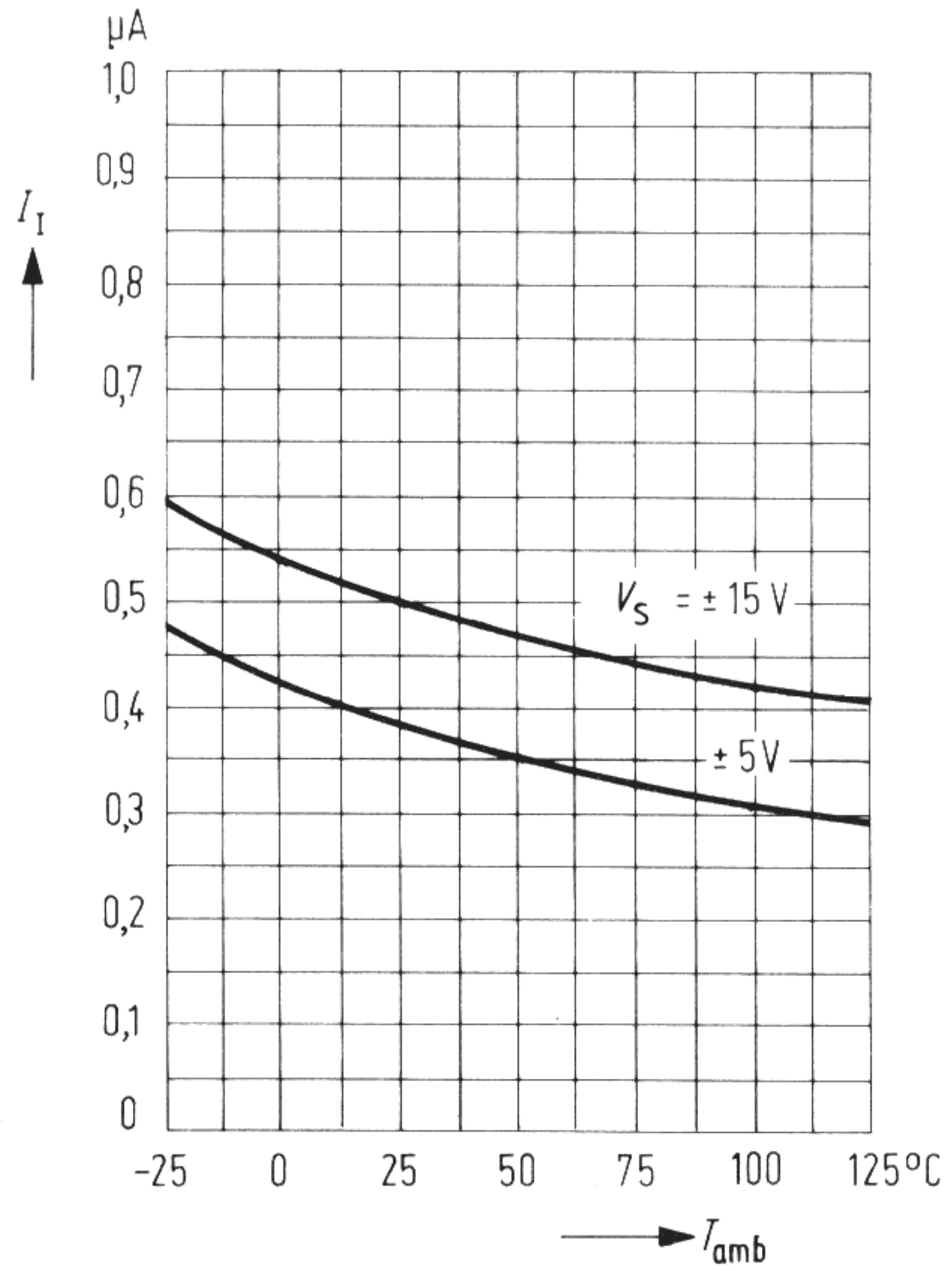
Input offset voltage
$V_{IO} = f(T_{amb})$; $R_L = 2\ k\Omega$
$V_S = \pm 10\ V$



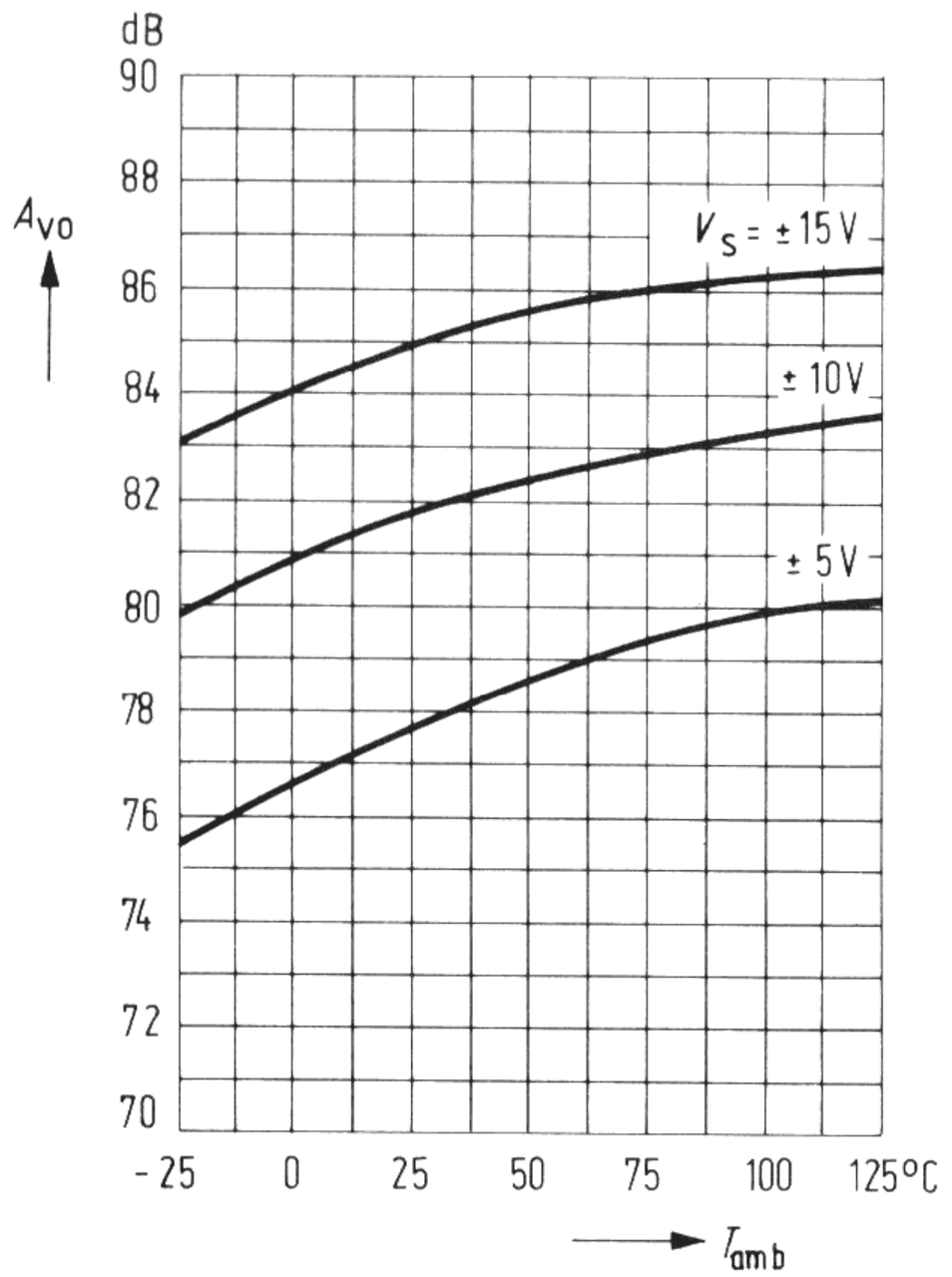
Input offset current
$I_{IO} = f(T_{amb})$; $R_L = 2\ k\Omega$
$V_S = \pm 10\ V$



Input current
$I_I = f(T_{amb})$; $R_L = 2\ k\Omega$

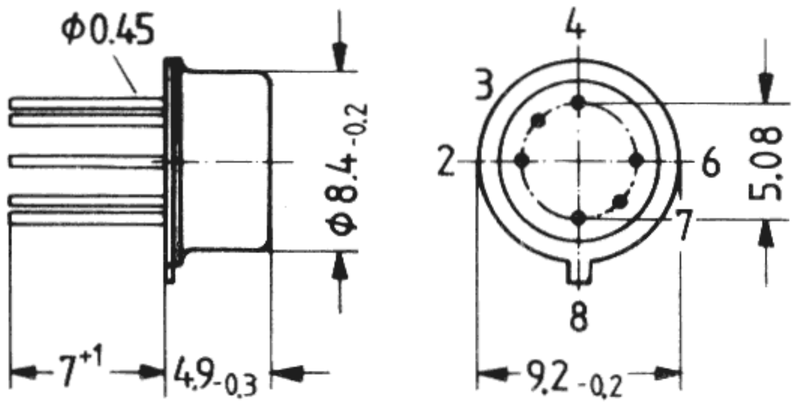


Open-loop voltage amplification
$A_{VO} = f(T_{amb})$; $R_L = 2\ k\Omega$; $f = 1\ kHz$



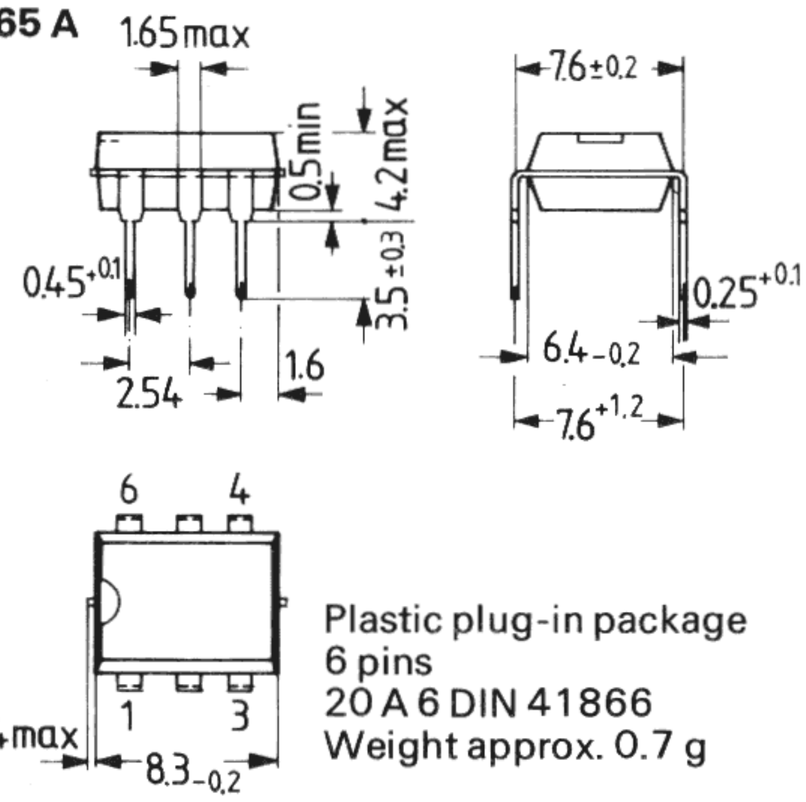
TAA 761 TAA 861
TAA 762 TAA 862
TAA 765 TAA 865

TAA 761/761 S/861
TAA 762/862
TAA 765/765 S/865



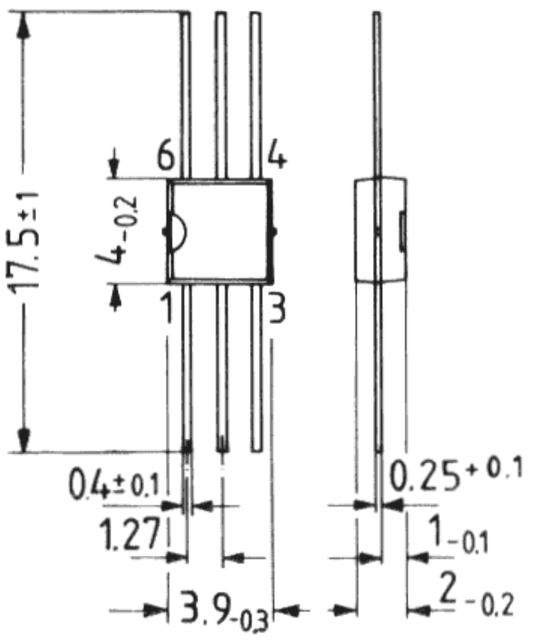
Package 5 H 6
DIN 41873
(similar to TO 78)
Weight approx. 1 g

TAA 761 A/861 A
TAA 765 A/865 A



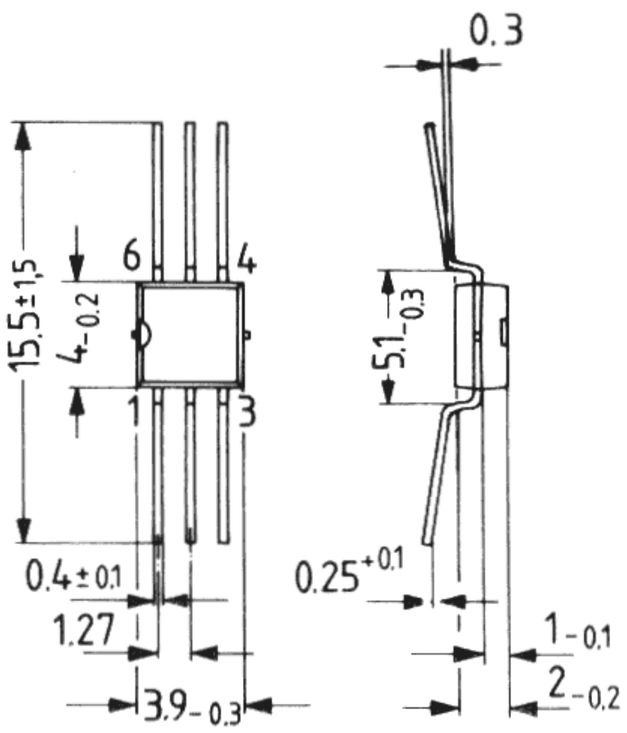
Plastic plug-in package
6 pins
20 A 6 DIN 41866
Weight approx. 0.7 g

TAA 761 W/861 W
TAA 765 W/865 W



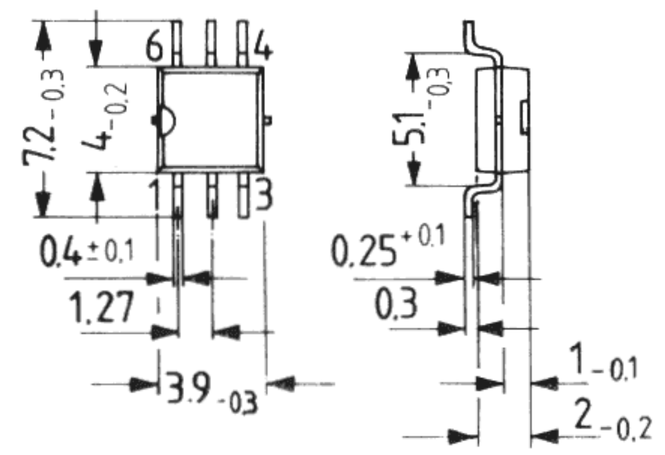
Miniature plastic package
6 pins
Weight approx. 0.1 g

TAA 761 G/861 G
TAA 765 G/865 G



Miniature plastic package
6 pins
Weight approx. 0.1 g

TAA 761 GG/861 GG
TAA 765 GG/865 GG



Miniature plastic package
6 pins
Weight approx. 0.1 g

TAA 761 K

Color code:

TAA 761 W; G; GG	white/white
TAA 765 W; G; GG	yellow/yellow
TAA 861 W; G; GG	green/green
TAA 865 W; G; GG	blue/blue

Micropack
6 pins
Dimensions of perforation
as per DIN 15851, sheet 2

Dimensions in mm